

STRATEGIC DISASTER MANAGEMENT WITH 'FAMILY' AS A DECISION LAYER AND PARTICIPATORY LOCAL PLANNING

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Geliş Tarihi: 16.11.2018

Kabul Tarihi: 03.12.2018

Abstract

Disaster risks are usually managed by central planning functions of national governments, consequently local knowledge of various geographies and cultures cannot be transferred to the planning processes effectively. This situation leads to the lack of community support for the disaster risk management issues. Article models three strategic decision layers, namely (1) national management, (2) risk mitigation planning group which is formed by related shareholders and stakeholders, and (3) family, to manage disaster risks effectively; and calls it as 'strategic disaster management'. Model claims that participation in the planning processes of which local knowledge is made use causes public motivation on support of disaster management processes and forms social consciousness as well.

Key Words: disaster management, strategic management, strategic planning, risk governance, participatory planning, interdisciplinary participation, local government.

Jel Codes: Q54, Q58, H11, H83, O21

Özet

Afet riskleri, ulusal yönetimin merkezi planlarıyla yönetilmekte, bu nedenle çeşitli coğrafya ve kültürlerin oluşturduğu yerel bilgi planlama süreçlerine etkin aktarılamamaktadır. Bu durum afet risk azaltma planlarına ve hazırlık süreçlerine toplumdaki yeterli destek alınamamasına neden olmakta, konuya ilişkin toplumsal bilinç oluşturulamamaktadır. Bu çalışma; (1) ulusal yönetim, (2) yereldeki ilgili paydaş ve etkileşenlerden oluşan risk azaltma planlama grubu ve (3) aileyi stratejik planlamaya ilişkin üç karar kademesi olarak modellemekte, risk yönetimi odaklı bu modeli 'stratejik afet yönetimi' olarak adlandırmaktadır. Model sonucunda, yerel bilginin etkin kullanıldığı planlama süreçlerine katılımın afet hazırlık, müdahale ve iyileştirme süreçlerine de katılım motivasyonu yaratılacağı, ayrıca konuya ilişkin toplumsal bilinç oluşumu sağlanacağı değerlendirilmektedir.

Anahtar Kelimeler: afet yönetimi, stratejik yönetim, stratejik planlama, risk yönetimi, katılımcı planlama, disiplinlerarası katılımcılık, yerel yönetim.

Jel Kodları: Q54, Q58, H11, H83, O21

1. INTRODUCTION

Disasters are discussed in nature-sourced or human-sourced distinction in literature, and procreate consequences in a wide interdisciplinary framework from macro/micro economy to geology or from meteorology to sociology. This wide domain and content that can threaten human life point out the need in which disasters to be managed effectively and solution efforts to address problems usually touch risk management paradigm.

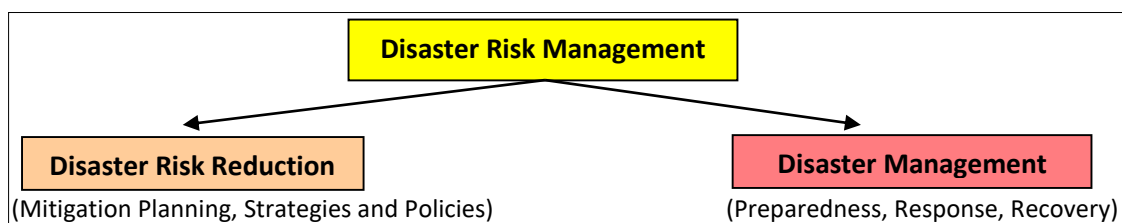
Disaster risk management (DRM) is a model which events and situations are assessed in accordance with functions, named as probability of a hazard (P), the exposure caused by the

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hazard (E), and the vulnerability of the exposed objects (V) in $R = E \times P \times V$ equation (Grahn & Nyberg, 2017: 367); and with which risk decisions are made. Disaster management (DM), on the other hand, is classified as one of the two component processes of DRM, and consists of preparedness, response and recovery activities. The other component is disaster risk mitigation producing mitigation planning, strategies and policies, and forming a critical premise for DM (Mojtahedi & Oo, 2017:36) as shown in Figure 1.

Figure 1: Components of DRM (adapted from (Mojtahedi & Oo, 2017: Figure 1))



The criteria like ‘types of disasters’, ‘conditions of settlements that may be exposed to disaster’, ‘levels of economic and cultural vulnerability of the community to be affected’ make the strategy, policies and mitigation plans complex and voluminous. This result is considered to have negative impacts on the priority preferences of the decision makers, the implementation and continuity of the planning, and the adoption of decisions by internal and external shareholders.

Moreover, disaster management is considered as a subject to be managed at national level as it requires high financial value resources. This perception carries the responsibility for planning disaster management to the level of national management, in that the probability and exposure predictions are usually made by the national level experts who have predominant methodological assessments. After all, (1) local knowledge grown out of local realizations, cultural experiences, traditional risk controls etc. cannot be used in planning process sufficiently (Topal, 2017) which may affect reliability and accuracy of action plans negatively; (2) disaster risk decisions made by national management agents may not create social awareness and responsibility on ‘families’ which are the most effective significant groups in the society in terms of disaster prevention preferences. This problem has a potential for high budget resource losses and loss of life over estimates on probable disaster impacts.

The aim of the research is to design a conceptual disaster management model to solve aforementioned problem effectively. In terms of structural composition of the paper, after first (introduction) section, second section will articulate theoretical background and methodology. Third section will proceed with model design proposal; and conclusive remarks will take part in the fourth.

2. THEORETICAL BACKGROUND AND METHODOLOGY

A disaster “is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources” (www.ifrc.org, 2018). It can also be defined as “an event that requires resources beyond the capability of a community and requires a multiple agency responses” (Blanchard, 2007: 275).

Definitions show that disasters are defined through their consequences, and reasons are either nature or human. On the other hand, that disasters lead to more casualties (three times more on average) in low-income countries although the total number of disaster occurrences is fewer than high-income countries’, and that nature-sourced events are considered as ‘natural’ and converted into disasters by humans themselves (Ersoy, 2016) are cultural propositions. So,

cultural dimension seems to have effects on both reasons and consequences. It is an obvious clue that disaster risks should be worked on at the level of communities, which are smaller than the country, since local cultures may vary even in the same country or city.

DM is, in traditional meaning, the management and organization of precautions which are taken in preceding, during and after-disaster phases both in each and through integrating the system in order to prevent disaster related losses and to mitigate the impact of disasters (Tercan, 2018: 104). Definition leads any responsible manager to think about future, likelihood of impacts of potential disasters, meaning risk management. Therefore any model design research must deal with common risk management models.

Furthermore, any disaster control must relate with organizational capacity of managing entity. Organizational analysis starting with internal and external environmental evaluation, objectives management, production of 'risk reduction' strategies on how to achieve the objectives, their implementation, monitoring, and evaluation of their results are inevitable. Strategic management responding to these holistic approach needs should be jointly integrated into the effort to enable disaster risk management.

2.1 Disaster Risks Governance and Risk Management:

In literature, risks were managed in a defensive way with a focus on insurance and contractual balance, at first. Then, more integrated approaches are acquired with control programs over safety, security and claims against threats. The more holistic approach with an integrated portfolio has been used today for informed decisions about uncertainties of future, including organization's continuity planning (IIA&RIMS, 2012).

This contemporary paradigm is named as enterprise risk management, and defined as "*a strategic business discipline that supports the achievement of an organization's objectives by addressing the full spectrum of its risks and managing the combined impact of those risks as an interrelated risk portfolio*" (www.rims.org, 2018). A disaster risk management of a settlement may comprise a wide variety of risk sources from a nuclear facility to floods, or from earthquakes to a city water reserve having a potential for bulk-poisoning-aimed terrorist attack. This broad risk range of every community directs the model to global ERM approaches such as ISO31000 and COSO.

In ISO31000 (2009 version), risk management is considered as a framework independent of the internal control system of the organization. Model includes mandate and commitment of upper management leading designing framework, implementation of risk management which is defined in detail with a process cycle, monitoring, and continuous system improving, in the light of principles (ISO, 2009). In 2018 version, on the other hand, iterative nature of risk management is emphasized "*noting that new experiences, knowledge and analysis can lead to a revision*" and risk management "*considers the external and internal context of the organization, including human behavior and cultural factors*" (ISO, 2018). Iterative nature needs planning function to be closer to the ever-changing conditions of local geography; new experiences, knowledge, cultural factors make it necessary to consult local knowledge of community which could be exposed to disaster potentially.

COSO Internal Control Integrated Framework examines the internal control environment of an organization in terms of eight components, namely internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, monitoring (KPMG, 2013). In applications of this model, internal stakeholders are held responsible for managing risks in their own domains in accordance with the Risk Strategy Memorandum issued by the senior management, providing insight for defining and

managing risks by a bottom-up method to create a system ownership attitude (TUR Ministry of Finance, 2014: 29-32). With this context, stakeholders of national disaster management and potential disaster geography may be considered as internal control system decision layers of an effective disaster management with which disaster geography is held responsible for managing related risks in their own. Potential disaster geography must form a rational participatory planning process in compliance with the framework of the national management.

2.2. Disaster Risks Governance and Strategic Management

The scarce resources problem which each organization has to face affects the disaster management actors as well, which is why responsible managers seek more holistic approaches. The literature on strategic management produces solutions to the aforementioned search through its prescriptive (design, planning, positioning) and descriptive (entrepreneurial, cognitive, learning, power, cultural, environmental) and configuration schools (Sarvan et al., 2003: 74).

Which school of strategic management should support a disaster management model design could be decided through the probable content of the problem, characteristics of environment, and stakeholder expectations. Despite distinctive nature of potential disaster geographies and their culture, disaster risk governance content which consists of probability leads the research to prescriptive schools. The involvement of public bodies as the actors, the relatively static nature of the environment, and effective preparation-period-expectations of stakeholders need a comprehensive planning process, meaning 'strategic planning'. It is the most appropriate school for effective disaster risk management if rationally considered.

In strategic planning, strategy development is a long and formal process. Strategic plans which are the responsibility of planners produce objectives put into effect through budgets and programs. School has literature on structural architecture of decision layers articulated by Igor Ansoff (through his book '*Corporate Strategy*') saying layers are strategic, administrative, operational. Strategic decision layer is formed by top management decisions, whereas administrative decisions are shaped by strategic, and operational decisions are shaped by managerial decisions (Sarvan et al., 2003: 78-79).

However, the school has received some criticism. Plans without vision create compliance issues when an unpredicted change happens. Even when the plans do not meet the need, the illusion that everything is under control (*illusion of control*) may develop in managers. Likewise, the application processes that appears separated from the plan lose importance; planning becomes an objective; plans become symbols, an element of public relations, a decorative component (Mintzberg, 1993).

Despite these criticisms, by (1) strengthening the strategy-setting activity with participatory approach, (2) determination of decision layers according to objectives, (3) rational definition of the direction, content and frequency of communication; strategic planning can shed light on our model design.

3. MODEL DEFINITION

3.1 Design Basis

In strategic planning models, the risks of corporate goals and objectives identified in accordance with vision and mission are monitored through objective-risk cards, risk record forms etc (TUR Ministry of Development, 2018: 44). In this regard, risk management is used to support achieving the predefined objectives. Instead of risk management being accepted as a phase in planning, it would be more useful to make it a 'thinking scheme' throughout planning and implementation

processes all. The objectives can be limited by the help of the primary risks which can be determined in strategic analysis, and after defining the disaster management objectives, objective-specific risks can be defined and managed again. Hereby, risk management can be embedded in strategic planning of disaster management, and the opportunity to identify more mature strategies would not be missed.

Besides, academics and standard-setting organizations tend to relate the responsibility for identifying strategies to senior management. This tendency condemns model designs to solutions that operate from top to bottom. Model should be designed on two basic criteria:

(1) Planning groups must be formed in local level instead of national resource allocating level to turn knowledge of potential disaster vicinity residents into opportunities.

(2) Planning specific for each type of potential disasters must be carried out by social platforms which consist of related shareholder and stakeholders to provide interdisciplinary participation to enhance risk governance (Ikeda, 2006: 12-20).

Model will be different from the relatively efficient practices of the competitive private enterprise; but with the widely known positive effect of competition, the opportunity to gain competitiveness to the model will be questioned.

3.2 Structure

With the help of literature research, model is emerged as a strategic planning model supported by risk management, and named as strategic disaster management.

In terms of decision layers, it is inevitable that national government, with the authority to distribute national resources and make agreements with international organizations, should be at one end of the layer order. (1) Strategy and policy making, (2) composing disaster preparation plans, (3) resource allocation, (4) establishing and managing crisis/emergency centers when a disaster occurs, are generally carried out by national governments. National managements prepare national risk maps by using their meteorological, hydrographic, seismological etc. detection, measurement, mapping, and surveillance facilities. In the light of these acquired data, they fulfill risk reduction processes in collaboration with the experts in national management level and out-sourced intellectual capital in the planning process (TUR Ministry of Interior Disaster& Emergency Management Presidency, 2011). In some cases local governments are given the task of making risk mitigation plans; but the processes are not monitored and coordinated effectively by national management (TUR Ministry of Development Specialization Commission, 2012: 17-28). This is an official finding as to disaster planning function cannot make use of local knowledge effectively, mentioned in the article problem statement. To solve this problem, one should either empower coordination between local governments and national management or delegate the planning responsibility to the local governments and plan the evaluation of the local results in national level. The second option provides more accurate and effective outputs if designed and managed properly.

The opposite end of the order of the model's decision layers must be 'family'. For, the main reason why disaster risk decisions cannot create sufficient impact on society is that they are insufficient to influence families' decisions. The way to eliminate this root cause is to bring the risk decision function closer to the families. The problem related to the cost of families' participation in the risk decisions can be solved by the representatives who have effective communication with the public and who are trusted. These representatives can bring the local risk realization knowledge and sometimes practical solutions and proposals of that geography to the planning processes (bottom-up), and take part in decision making. Likewise on the opposite direction, the delivery of disaster risk information and strategies to the family (top-

down) through representatives will create social consciousness, and allow public support (insurance preferences, avoidance of preferences that increase the disaster risks, providing effective and fast information to the relevant stakeholder when risk indicators occur, etc.) for the disaster preparation process. Supporting this consciousness with national and local media platforms will lead to the transformation of awareness into culture or evolution of poisonous culture (accepting disaster as a fate or divine phenomenon, preferring individual benefit to the public interest, etc.) if any.

The definition of the family as a strategic planning decision level is not common in the literature. For it is a community (1) of which control, coordination, communication, monitoring is difficult, and (2) which can choose not to implement strategic plan decisions, and (3) which is not included in a defined organizational discipline. But at the same time, it is the stakeholder (1) which has a legal definition and legal responsibilities to its members, and (2) which can create public opinion and can determine the success or failure of social/ political decisions, and (3) which is the main component of the society like individuals. The family, in terms of the responsibilities imposed on its members, is more sensitive to the social issues such as disaster management than the individual. Considering that family preferences can be steered by legal regulations, elected managers, opinion leaders and media, it is crucial that the family be defined as a decision layer and participate in the local strategic planning process through representatives in order to provide solution to article problem.

Moreover, it is common to think that public participation in decision-making can only be achieved by means of voting mechanisms such as elections. This idea makes the family passive in disaster management, a matter which directly affects the welfare and future of society. However, the family has a direct impact on success of disaster management issues, such as maintenance of public order and legitimacy of urban development plans, especially through its lifestyle, maturity level of its awareness, and microeconomic preferences. This impact on content and accuracy of disaster risk management plans becomes a more important social benefit than possible costs such as incentives for participation and prolonged planning time. The phenomenon which provides face to face communication opportunities; dignity of representation in the local decision-making body; joining efforts of more effective use of resources, etc. also increases the probability of success of the plans. In this context, the strategic disaster management model is emerged with the stages in Figure 2 below.

Figure 2: Strategic Disaster Management Decision Layers & Org. Communication Design.



The aim of the model is;

(1) to support the strategic planning functions by local knowledge generated by local shareholders and stakeholders combination specific for each disaster potential in order to provide risk governance,

(2) to create a local culture in which families and related groups support and monitor disaster risk management (Alexander, 2006: 11).

3.3 Mechanism

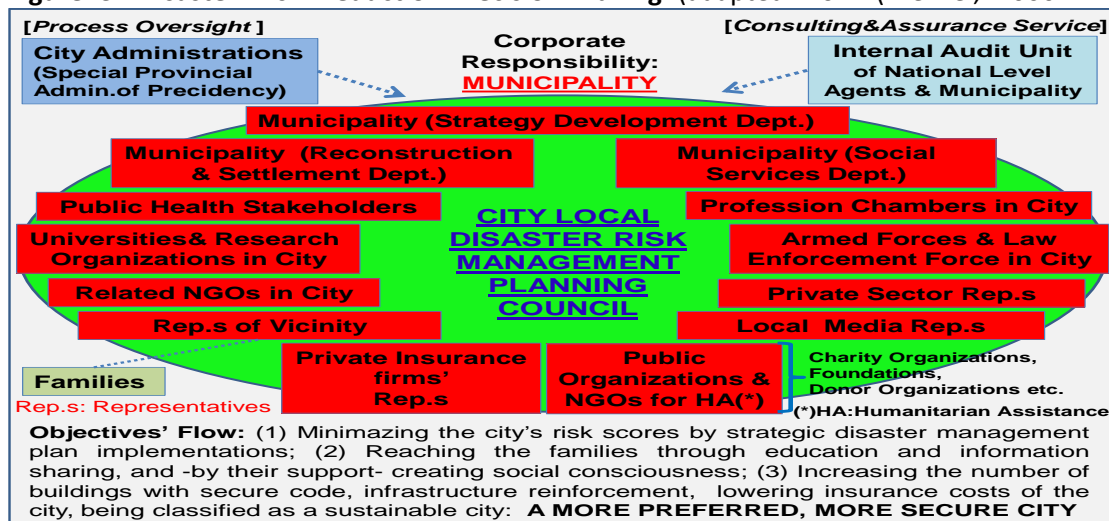
In the light of national statistical data and intelligence information, Interior Disaster and Emergency Presidency (hereinafter national management) publishes national disaster risk maps that include information regarding potential nature-sourced and human-sourced disaster in its website. This website also shows a specific 'risk score' for each potential disaster that related city may be exposed to. Risk scores are calculated by probability of a hazard (P), the exposure caused by the hazard (E), and the vulnerability coefficient (V) of the province with $R = E \times P \times V$ equation. Besides, an overall risk score for the city is calculated by associating all the specific risk scores of with each other, and published. All of these scores constitute the disaster risk management maturity index of cities, which may be updated by national management only.

National management publishes a Risk Strategy Memorandum (RSM) which gives authority to city municipalities (as local governments) to plan local disaster risk management issues, and in which risk appetite for each disaster type and province; national preferences; procedure and time limits for plan; technical support access information; exposure, probability and vulnerability scoring scales, reporting mechanisms etc. are published.

Local Disaster Risk Reduction Planning Councils are established by municipalities, and work in accordance with RSM. The member configuration of each council is critical to achieve the benefit of participation. The representation of the family on the council is ensured by citizens (for example *muhtars* of vicinities, or elected local managers of settlements smaller than the city, where available) who have given confidence and are having the opportunity to communicate with the society.

A generic planning council configuration which is formed by participatory method has been presented in Figure 3.

Figure 3: Disaster Risk Reduction Decision-Making (adapted from (Wenzel, 2006: 228))



Disaster risk reduction planning requires strategic analysis regarding the capabilities of potential disaster society and environmental factors, such as geological and meteorological

vulnerabilities, dominant culture, regulations, technology, shareholder expectations etc. Considering strong and weak features of varying sizes for each type of disaster, and varying cultural sensitivities specific to related society, strategic analysis becomes more significant. National and local government's technical support, interest and knowledge of planning council members, accumulation of experience of living in that specific neighborhood shape the strategic analysis and plan/implementation success.

The goal of strategic disaster management planning is to reduce the specific and overall risk scores of the city. The objectives are defined in accordance with this goal, strategic analysis, and the criteria of objective setting (specific, measurable, achievable, relevant, and timely). Risks which may be an event, a situation, an action, an obstacle, are recorded by considering probable actions. Each risk is assigned an exposure (impact) score, a probability score, a vulnerability coefficient component which are scale-compatible (defined in the RSM) and should be supported by statistical data, local experiences and knowledge, shreds of evidence. The arithmetic average of score offers of participants gives the value of the component, so the score of related disaster risk is emerged. In accordance with the scale(s) in the RSM, the risks are classified as high, medium and low, and prioritized.

After prioritization, the risk decision (acceptance, transfer, avoidance or control) is given for each risk of which score is higher than related risk appetite value. 'Acceptance' means not to plan any measures and to take risk; 'transfer' means to share the responsibility of risk generally with a more professional initiative; 'avoidance' means to put an end to the activity that creates the risk, and 'control' means to take measures to reduce risk. These risk decisions form input to both the strategy setting activity and the action plans. The strategies identified make up reference to disaster preparedness programs, budgets and indicators intended to measure the performance of projects/ action plans.

The risks of objectives determined for each potential disaster assessed become meaningful when recorded together with action plans. The updated scores of risks and the effectiveness of planned controls (action plans) are monitored periodically from these records. Resource demands for action plans and high risks for which a risk decision cannot be made are reported through risk reporting forms in project files.

Project proposals are evaluated by the national management. National management is a decision layer in which local creative solutions to use resources more effectively can be studied (Alexander, 2006: 9) and disseminated, project merging opportunities can be made use of, coordinating options with international organizations are created where necessary, effective and non-economic disaster reduction projects are returned with recommendations to be reconsidered by related council.

Action plans are shared with vicinity dwellers through representatives to provide family support for projects. Information sharing must be strengthened by technical support of municipality, and training especially through local media. For instance, local authorities could inspect technically the families' residences whether they are structurally secure, free of charge. The results of this technical support may indicate why the model has appointed the family as the decision layer. Microeconomic preferences of families, which take technical reports and action plans into account, affect private sectors' preferences on construction site, architectural plan, construction materials, etc., and pricing mechanisms (The World Bank, 2010: 76-104). Motivating the families to carry out risk management for their own living space and spreading of the insurance habit to society lead the insurance system to provide higher quality and affordable services. Another example for technical support is to provide a 'disaster early warning and intervention call center' service having both website and mobile phone applications. Individuals may be asked to inform

about any risk indicators to the incumbent organization proactively or any risk realizations that require intervention after a disaster occurs, by sending the images they recorded via mobile phone to the website or by calling. (Nagasaka, 2006). Early warning service can cause not only effective assistance in response phase but also prevention of especially human-sourced disasters. In response phase, intervention teams will be directed to the intervention areas fast; and it will be possible to create a response time to the community in the potential domain through website publications and their reflections in local media news. The fact that most flood disasters have a developmental process of about 15 minutes is a good example of the importance of early warning system.

Both disaster risk reduction process and disaster management are expected to be monitored by decision-making platform actors and the families which acquire society consciousness. But the strategic control bodies of the model are the elements of internal control system, namely process oversight of city administrations, and consultancy and assurance services of internal audit units. Internal audit units of both national management and related municipality are of great importance; since increasing the value of disaster data, transforming them into information and transferring them to the planning process add actual value to the risk governance through the internal audit functions (Gökdeniz, Kartal, & Yetiş, 2018). Besides, the internal audit function is expected to provide consultancy services to public stakeholders on strategic plan preparation, risk analysis, meeting management, and methods of obtaining qualified assistance, and to pay particular attention to the effectiveness of controls on fraud risks and vitiation of the system for personal benefits.

4. CONCLUSION

With the potential to affect disaster management success directly by its preferences, the family should be removed from its passive position and be represented in the strategic planning groups of disaster risk management. Only by this strategy which gives life to this article's model, disaster risk management is owned by this smallest communal actor of the public, and disaster risk governance is provided.

The model moves the local knowledge to participatory strategic planning work facilitated by local (municipality) governments under the direction of national management. The selection of members of planning platform and efficiency of model's process flow define the success of disaster risk management.

The features of strategic management of phenomenon supported by risk management applications cause that the model is named as strategic disaster management. Model defines the steps as (1) strategic analysis by effective use of local knowledge, (2) identification of risks, (3) risk decisions, (4) strategy formulation and transferring the strategies to disaster management project drafts, (5) reporting and providing national management's approval, (6) informing, educating and acquiring the support of families, (7) forming awareness and social consciousness about disaster risk management issues.

The model reduces the city's specific and general risk score(s) and the insurance costs and premiums in the province, makes public order more reliable, and creates positive competition among local governments for being allocated more resources. These results can be expected to influence even the resettlement choices of the asylum seekers and domestic migration movements, which is still a global problem; and make the new settlements within the city, which are caused by growth and migration, more planned. The city becomes more preferred settlement which adds value to the province because of the effort to achieve and maintain the most effective level of preparedness and maturity for disaster. This cycle causes high-risk

settlement residents to migrate to more secure provinces, therefore serves for preventing and reducing the loss of life and property, which is the main risk of disaster management.

The model, as well as the solution to the article problem, allows handling the possibility of possible collapse in other secondary and social systems due to a disaster or serial disasters named as systematic risk (Ikeda, 2006: 1).

Model is open to development in that (1) Firstly, model should be implemented in pilot centers and the results should be examined by of national level managers, (2) measuring the perception of the model in three defined decision layers in relation to the expected benefits and the results needs the attention of the researchers.

ACKNOWLEDGMENTS

This article was produced by Ozcan YETIS from the thesis research made in the doctoral program in Kirikkale University Social Sciences Institute Business Administration Department, under the advisory of Associate Professor Ismail GOKDENIZ. The authors would like to thank Professor Ihsan YUKSEL (Kirikkale University) who provided suggestions that improve the quality of the research in the early draft of this publication.

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